

A stemmiulid milliped from Central Africa

by

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With 6 text-figures

ABSTRACT

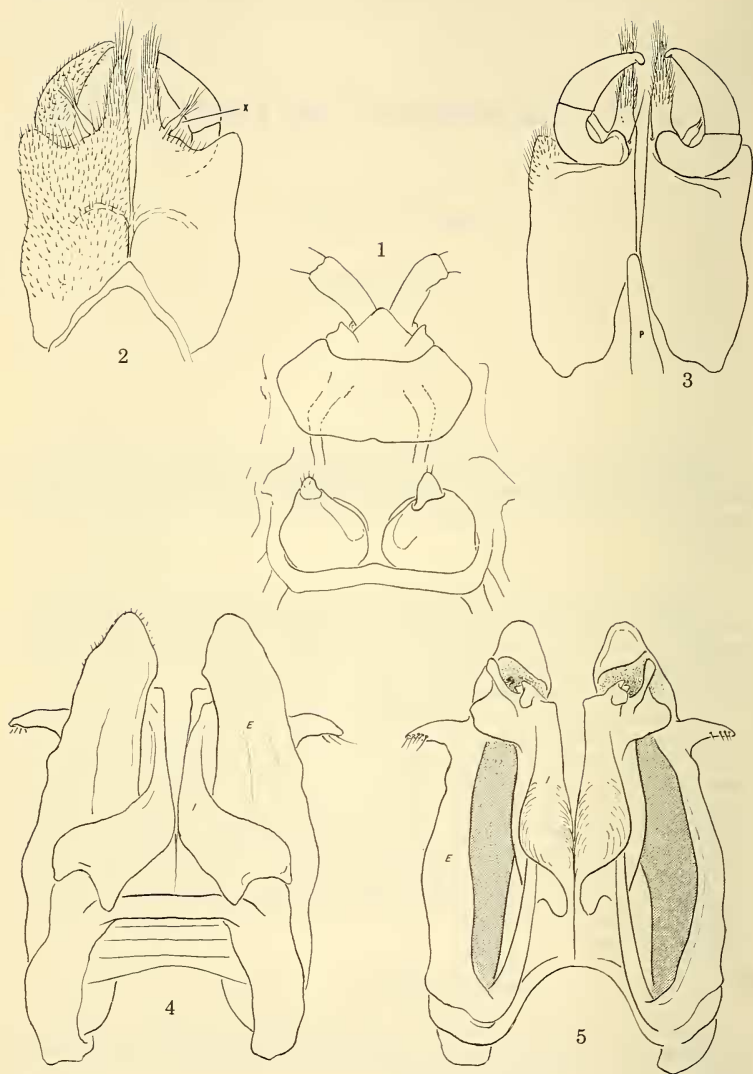
Diopsiulus lacustris is described from the western part of Rwanda near Lake Kivu. Modifications of the second pair of legs of the male sex are similar to those of several species of the same genus known from southern India and Ceylon and suggest a possible eastern line of affinity. Heretofore no stemmiulids have been known from Central Africa.

Millipeds of the small and disjunct order Stemmiulida comprise an assemblage of obviously very specialized organisms with a fragmented, relictual distribution. Approximately 100 species have been described from tropical America (Vera Cruz to Ecuador, West Indies), West Africa (Portugese Guinea to Gabon), Tanzania, south India, Sri Lanka, and New Guinea, dispersed among five nominal genera.

In view of the phylogenetic interest of these diplopods, a certain importance attaches to any new information of a biogeographical nature. Although nearly 30 species are known from the West African rain forest, only one has been found elsewhere on the entire African continent, this being *Nethoiulus sjoestedti* (Attems) which occurs on Mount Kilimandjaro. Obviously the discovery of the group elsewhere in central Africa would be a matter of great interest, and it was therefore a pleasant surprise when, during a recent visit to the Museum d'Histoire naturelle de Genève, I found several samples of a small stemmiulid amongst the unidentified material of Diplopoda. Placed in my hands for study by Dr. Bernd Hauser, this material forms the basis of a brief report, in which the species is named and some notes are given with reference to possible geographical affinities.

Diopsiulus lacustris sp. nov. (fig. 1-5)

Material. — Rwanda: Kayove, ca. 30 km SSE of Kisenyi, 2100 m., 15 April 1973, ♂ paratype; 23 April 1973, ♂ holotype, ♀ paratype, 3 immature; 25 April 1973, 2 ♀ paratypes, 3 immature. Rwanda: Rangiro, 1800 m., 10 July 1973, 2 ♀, 4 immature; all material leg. P. Werner (Museum Genève).



Diagnosis. — A small species of *Diopsiulus* characterized by the laterally projecting subterminal lobe of the angiocoxites (Figs. 4, 5, E) and the details of shape of the distal end of the colpocoxites (Fig. 5), and especially by the form of the second pair of legs (Fig. 2, 3) the coxae of which are elongated and densely setose on the anterior side, apically produced into a long styliform, distally plumose process bearing a small bacilliform process (Fig. 2, X) near its base on the lateral side.

Holotype. — Adult male, ca. 11 mm. in length (broken), 0.9 mm. in maximum diameter, body with 42 segments. Head, collum, epiproct, and paraprocts deep bluish-purple, other segments dark brown, each with a light median dorsal stripe and on each side a broad C-shaped light mark with the open end directed caudad, lower end of each pleurotergum with a large rounded light spot; legs almost colorless. With low magnification the color pattern appears to be generally dark brown with five longitudinal light stripes.

Head of typical form, set with numerous simple macrosetae; ocelli 2-2, the anterior slightly smaller. Both antennae missing. Gnathochilarium concave, stipes densely and uniformly porose.

First pair of legs unmodified, tarsal segment with a fringe of setae on basal two-thirds of ventral surface but no true brush formed; postfemur and tibia each with a prominently enlarged ventral macroseta and several smaller setae in a compact cluster; no plumose or spatulate setae present.

Second pair of legs (Figs. 2, 3) with coxae enlarged and elongated, setose on entire anterior surface, glabrous on posterior except on apical lateral corner; medially produced into prominently elongated conical, distally plumose projections, each with a small bacilliform, distally plumose projection (X) near base on the lateral side. Telopodite bisegmented, the basal segment recurved proximad and laterad, the distal long and slender, curved mesad and slightly uncate apically (Fig. 3).

Third pair of legs unmodified, similar to those following, without specialized setae.

Gonopods (Figs. 4, 5) of the structure typical for the genus, but angiocoxites with a small projecting subterminal process carrying a short series of setae on the posterior side. Apex of colpocoxite with a large rounded lateral lobe from the base of which originates a long slender distally broadened projection, mesad to the base of which is a small, caudally directed lobe with two acute processes at its base (Fig. 5).

Paragonopods small, bi-segmented, the basal segment subglobose or subpyriform, distal segment minute, conical, with a few setae (Fig. 1).

Relationships. — I perceive no close affinity of this species with any of the numerous West African forms. However, some structural similarities are shared with several members of the South Indian fauna (*D. annandalei* Silvestri, 1916; *D. mulierosus* Carl, 1937; *D. vagans* Carl, 1941), particularly as regards the form of the second male legs. The last two named are nearly twice as large as *lacustris*, and *D. vagans* has a much higher segment count (51-54 vs. 42) but is closest in general form of the gonopods.

FIGS. 1-5

Diopsiulus lacustris, sp. n.

Fig. 1: paragonopods and sternum of 10th leg pair, ventral aspect. — Fig. 2: second pair of legs, oral aspect. — Fig. 3: second pair of legs, aboral aspect, distal part of penis (P) also shown. Fig. 4: gonopods, oral aspect, I, colpocoxite; E, angiocoxite. — Fig. 5: gonopods, aboral aspect. Drawings from holotype.

For the present, it is only suggestive that the closest similarities of the Rwanda species appear to be with Indian forms rather than those of West Africa, a circumstance that finds at least a partial parallel in the case of the spiroboloid family Pachybolidae. The total lack of specialization of the third pair of legs, and absence of any modified setae, suggests that *lacustris* embodies a fairly generalized structural syndrome.



FIG. 6.

Known distribution of stemmiulids in Africa. Ovals, *Diopsiulus*; triangle, *Nethoiulus*; dashed line indicates approximate extent of tropical rain forest, traces of which also persist on some of the higher mountains of east Africa. No fewer than 15 species are known from the locality (Mont Nimba) represented by the fourth spot from the left in West Africa.

Stemmiulids in general pose a capital problem in the ranking of taxonomic priorities. With only a few exceptions, the gonopods are basically very similar throughout the family, differences being expressed chiefly in the distal modifications of the colpocoxites and angiocoxites. A much greater range (and magnitude) of variation affects the anterior legs of the males, particularly the second and third pairs, but it remains so far unknown whether the more extreme modifications reflect phylogenetic affinity or are merely the result of random parallel evolution determined by some functional cause. Doubtless

a long time will pass before meaningful insights into stemmiulid evolution can be gained. The work of Demange & Mauries (1975) indicates that a great number of species remain to be found in tropical Africa, and the corresponding faunas of southern India and northern South America have scarcely been touched.

Etymology. — The specific name is bestowed in recognition of the occurrence of this species in the lake region of central Africa, more specifically only a few kilometers east of Lake Kivu.

REFERENCES

- CARL, J. 1941. Diplopoden aus Südindien und Ceylon. 2. Teil: Nematophora und Juliformia. *Revue suisse Zool.* 48: 569-714.
- DEMANGE, J.-M. et J.-P. MAURIES. 1975. Myriapodes-Diplopodes des Montes Nimba et Tonkouï (Côte d'Ivoire, Guinée) récoltés par M. Lamotte et ses collaborateurs de 1942 à 1960. *Annls. Mus. roy. afr. centr. sci. zool.* 212: 1-192.
- SILVESTRI, F. 1916. Contribuzione alla conoscenza degli Stemmiuloidea (Diplopoda). *Boll. Lab. zool. Gen. agrar. Portici*, 10: 287-347.

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